



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,554	09/07/2005	Richard John Evans	038819.55861US	9119
23911 7590 06/23/2008 CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300				
EXAMINER				
FUJITA, KATRINA R				
ART UNIT		PAPER NUMBER		
2624				
MAIL DATE		DELIVERY MODE		
06/23/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/524,554

Applicant(s)

EVANS, RICHARD JOHN

Examiner

KATRINA FUJITA

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2008.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-15 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 25 March 2008 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office Action is response to Applicant's remarks received on March 25, 2008. Claims 1-15 remain pending.

Drawings

2. Figure 1 is objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 16.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The previous specification objections have been withdrawn in light of Applicant's amendment.

Claim Suggestions

4. The previous claim suggestion has been withdrawn in light of Applicant's amendment.

Claim Objections

5. The previous claim objections have been withdrawn in light of Applicant's amendment.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 8-12 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Watanabe (US 2003/0048926).

Regarding **claim 1**, Watanabe discloses a method for processing video images to detect an event of interest ("surveillance system and surveillance method and surveillance program for automatically detecting a person matching prescribed conditions from surveillance images" at paragraph 0002, line 1), comprising:

- receiving a video signal representing the video images to be processed (figure 15, numeral 10);

- extracting at least one point feature from the video signal (figure 16, numeral 12);

- tracking the position and movement of the at least one point feature within the video images to generate a corresponding at least one track, each of said at least one track representing a corresponding point feature (figure 16, numeral 13);

- using an iterative learning process to derive a normal pattern of behavior for each track (figure 16, numeral 64);

- comparing present behavior of the at least one track to the respective normal pattern of behavior (figure 15, numeral 81); and

in response to the present behavior falling outside the normal pattern of behavior, generating an alarm signal ("information for a theft suspect" at paragraph 0149, line 7).

Regarding **claim 2**, Watanabe discloses a method wherein the alarm signal causes at least one of the following effects:

draw the attention of the operator ("sending information about a specific person to be detected by one particular client section 60" at paragraph 0163, line 1);

place an index mark at the appropriate place in recorded video data; and

trigger selective recording of video data.

Regarding **claim 8**, Watanabe discloses a method wherein the comparison process acts to classify as normal behavior a track adjacent or near a cell (figure 9) which is above the occupancy threshold, despite the track appearing in a cell below the occupancy threshold, where one cell is considered to be near another if the distance between them is below a predetermined distance threshold ("whether or not the characteristics of the human region thus detected match the characteristics of the specific person" at paragraph 0111, line 5).

Regarding **claim 9**, Watanabe discloses a method wherein abnormal tracks are filtered, whereby an active alarm signal is generated in response to an abnormal track which resembles a number of other abnormal tracks ("detects the suspect from the surveillance images" at paragraph 0149, line 10), in terms of at least one of position, velocity and time.

Regarding **claim 10**, Watanabe discloses a method wherein abnormal tracks are filtered, whereby an active alarm signal is generated in response only to an abnormal

track which has been classified as abnormal on a predetermined number of occasions (i.e. once).

Regarding **claim 11**, Watanabe discloses a method wherein abnormal tracks are filtered, whereby an active alarm signal is generated in response only to a track being classified as abnormal for the first time ("inputs information about a specific person (for example, a person who has conducted suspicious actions)" at paragraph 0160, line 21).

Regarding **claim 12**, Watanabe discloses a method wherein abnormal tracks are filtered, whereby an active alarm signal is generated only in response to a filtered version of the classification rising above a predetermined threshold value ("If it is judged that the face image in the specific person table 24 does match" at paragraph 0112, line 1).

Regarding **claim 15**, Watanabe discloses an apparatus for processing video images to detect an event of interest ("surveillance system and surveillance method and surveillance program for automatically detecting a person matching prescribed conditions from surveillance images" at paragraph 0002, line 1), comprising:

- a source of video images, which produces a video signal representing the video images to be processed (figure 15, numeral 10);

- a feature extraction device that receives the video signal, and produces data representing at least one point feature detected within the image (figure 16, numeral 12);

- a feature tracking device that receives the data representing said at least one point feature, and produces data representing a track that is representative of position

and speed of each of said at least one point feature within the image (figure 16, numeral 13);

a learning device that receives the data representing tracks of said at least one point feature, and produces a signal representing a range of behavior considered normal by the learning device, in response to operation of a learning process on the data representing the tracks (figure 16, numeral 64);

a classification device that receives both the signal representing the normal range of behavior of the tracks and the data representing the tracks, and is adapted to compare the signal and the data and to issue a normal/abnormal signal in accordance with the outcome of such comparison (figure 15, numeral 81); and

an alarm generation device that receives the normal/abnormal signal and generates at least one active alarm signal in response to the normal/abnormal signal indicating abnormal behavior of at least one track ("information for a theft suspect" at paragraph 0149, line 7).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Watanabe and Schwerdt et al. ("Visual Recognition of Emotional States", ICMI).

Regarding **claims 3 and 4**, Watanabe discloses a method wherein the learning process accumulates data representing the behavior of the track(s) over a period of time using four dimensions representing x-position, y-position, x-velocity and y-velocity, of the track(s) within the video image (figure 9) wherein the learn behavior stage segregates the tracks according to a velocity threshold; tracks moving at a velocity below the velocity threshold are considered stationary (figure 9, "Stay") while tracks moving at a velocity in excess of the velocity threshold are considered mobile (figure 9, "Move"); data concerning the mobile tracks is stored, data concerning the stationary tracks is stored in a two-dimension histogram (figure 6) representing x-position and y-position within the video image.

Watanabe does not disclose that the data concerning the mobile tracks is stored in a four-dimensional histogram.

Schwerdt et al. discloses a method in the same field of endeavor of object tracking and recognition that accumulates data representing the behavior of the mobile track(s) over a period of time in a four-dimensional histogram ("four dimensional histogram" at section 3.2, paragraph 4, line 1).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the 4-D histogram of Schwerdt et al. to keep track of the data of

Watanabe "because the memory space requirements are lower" (Schwerdt et al. at section 3.2, paragraph 6, line 8).

Regarding **claim 7**, Schwerdt et al. discloses a method wherein the comparison process classifies a track according to a comparison of the frequency of occupation of the corresponding histogram cell with an occupancy threshold (Table 2).

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Watanabe and Kamin (US 4,198,653).

Watanabe discloses the elements of claim 1 as described in the 102 rejection above.

Watanabe does not disclose that subsequent active alarm signals are inhibited for a predetermined time interval after a first active alarm signal has been produced.

Kamin discloses a method in the same field of endeavor of video tracking wherein subsequent active alarm signals are inhibited for a predetermined time interval after a first active alarm signal has been produced ("first alarm pulse A' (Fig. 3d), which originates from field 2 and which would normally result in a spurious alarm, is suppressed at the right time" at col. 4, line 24).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the delay of Kamin in the alarm generation device of Watanabe to provide "high sensitivity with respect to events which are relevant to a genuine alarm" (Kamin at col. 1, line 59).

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Watanabe and Wyschogrod et al. (US 5,374,932).

Watanabe discloses the elements of claim 1 as described in the 102 rejection above.

Watanabe does not disclose that subsequent active alarm signals are inhibited if caused by an abnormal track within a predetermined distance of another track which has previously generated an alarm.

Wyschogrod et al. discloses a method in the same field of endeavor of video surveillance wherein subsequent active alarm signals are inhibited if caused by an abnormal track within a predetermined distance of another track which has previously generated an alarm ("alerts to suppressed if the target on approach is projected onto more than one runway" at col. 106, line 23).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the alert suppression in the alarm generation device of Watanabe to prevent alert generation for false targets.

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Watanabe and Schwerdt et al. as applied to claim 3 above, and further in view of Zuniga (US 5,546,474).

The Watanabe and Schwerdt et al. combination discloses the elements of claim 3 as described in the 103 rejection above.

The Watanabe and Schwerdt et al. combination does not disclose that a cell size of the histogram varies in accordance with a measured speed in the image of each respective track.

Zuniga discloses a method in the same field of endeavor of region detection wherein a cell size ("size of a cell can vary" at col. 10, line 14) of the histogram varies in accordance with a measured speed in the image of each respective track ("moment of inertia" at col. 10, line 9).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the cell varying of Zuniga in the histogram of the Watanabe and Schwerdt et al. combination to allow the user to evaluate a "performance/quality tradeoff" (Zuniga at col. 10, line 15).

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Watanabe and Schwerdt et al. as applied to claim 3 above, and further in view of Jepson et al. (US 7,058,205).

The Watanabe and Schwerdt et al. combination discloses the elements of claim 3 as described in the 103 rejection above.

The Watanabe and Schwerdt et al. combination does not disclose that the histogram is periodically de-weighted in order to bias the result of the learning process towards more recent events.

Jepson et al. discloses a method in the same field of endeavor of motion tracking wherein the histogram is periodically de-weighted in order to bias the result of the

Art Unit: 2624

learning process towards more recent events ("up-weight the more recent frames" at col. 3, line 19).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the weight varying of Jepson et al. to the histogram of the Watanabe and Schwerdt et al. combination such that a "optimal motion estimation is achieved" (Jepson et al. at col. 3, line 12).

Response to Arguments

Summary of Remarks (@ response page labeled 18): The Watanabe reference does not implement a learning function that determines normal behavior of a track.

Examiner's Response: As the Watanabe reference discloses monitoring behavior of people, which includes product tendencies and whether or not they are a high spender, it follows that the system learns the repeated normal behavior of people.

Summary of Remarks (@ response page labeled 19): The Watanabe reference does not classify behavior as normal or abnormal.

Examiner's Response: The Watanabe reference detects specific persons based on behavior tables. It sometimes happens that the detected person in the surveillance

image does not match the particular characteristics of the specific person being searched for, even though it was determined that they were a match. As such, a detected person, who may be classified as a high spender, can be flagged as a theft suspect, which would be abnormal behavior for that detected person.

Summary of Remarks (@ response page labeled 19): The Watanabe reference does not disclose generating an alarm signal to warn of abnormal behavior.

Examiner's Response: The Watanabe reference outputs a display or audio warning in the previously described scenario, which amounts to an alarm signal of abnormal behavior.

Summary of Remarks (@ response page labeled 23): The Schwerdt et al. reference does not disclose learning normal behavior.

Examiner's Response: The Schwerdt et al. reference was not utilized for the specifics of the learning process, but rather as a teaching of how 4-dimensional histograms can be used in a tracking environment.

Summary of Remarks (@ response page labeled 25): The Schwerdt et al. reference does not disclose an occupancy threshold and does not relate to "whether observed behavior is normal or abnormal".

Examiner's Response: The Schwerdt et al. reference contains an occupancy threshold which corresponds to the number of cells that occupy the histogram and thereby affects the reliability of the classification. Furthermore, the Schwerdt et al. reference need not teach classifying observed behavior, as it is utilized for teachings in the classification comparison process in general.

Summary of Remarks (@ response page labeled 25): The Kamin reference "attempts to block all alarm indications - not just ones following a first active alarm".

Examiner's Response: The first alarm pulse as cited in the rejection is an active alarm that has been produced and alarm pulses subsequent to this during a certain time period are inhibited, as required by the claim.

Summary of Remarks (@ response page labeled 26): The Wyschogrod et al. reference does not disclose a track that has previously generated an alarm.

Examiner's Response: The arriving target generates an alert as soon as it is determined that it is projected to land. If an arriving target becomes ambiguously projected subsequent to initiating the landing alert, alerts can be suppressed.

Summary of Remarks (@ response page labeled 21): None of the cited references disclose the elements of claims 5-12.

Examiner's Response: The Examiner has cited references for the elements of claims 5-12 in the rejections above which address the elements of the claims. As Applicant has not pointed out any specifics with regard to the deficiencies of the cited references, the Examiner will not address these arguments any further.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2624

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KATRINA FUJITA whose telephone number is (571)270-1574. The examiner can normally be reached on M-Th 8-5:30pm, F 8-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katrina Fujita/
Examiner, Art Unit 2624

/Vikkram Bali/
Supervisory Patent Examiner, Art Unit 2624